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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/847,370	05/03/2001	Manabu Mizusaki	NEC2410-US	7669

466 7590 09/26/2003

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EXAMINER

MITCHELL, JAMES M

ART UNIT PAPER NUMBER

2827

DATE MAILED: 09/26/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/847,370	MIZUSAKI, MANABU	
	Examiner	Art Unit	
	James M. Mitchell	2827	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 22 August 2003.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-19 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-19 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- | | |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) Paper No(s). _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Response to Amendment

Applicant's request for reconsideration of the finality of the rejection of the last Office action is persuasive and, therefore, the finality of that action is withdrawn.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1-6 and 8-19 are rejected under 35 U.S.C. 103(a) as being unpatentable over Nishiguchi (US 5,214,308) in combination with Rostoker (US 5,767,580).

Nishiguchi (Fig 3) discloses an electrode structure of a carrier substrate of a BGA semiconductor device (1) for solder-bonding the semiconductor device to a main substrate, said electrode structure comprising: a carrier substrate (3) having a cup shaped recess with a shape in a central area of a surface thereof; a soldering land ("terminal"; 5) of the electrode structure (2) arranged in the recess, said soldering land having a circumferential wall (via lateral portion) defining a hollow portion extending from said surface, said circumferential wall being entirely within and shaped to said recess and a flange portion (via portion extends over substrate) and said soldering land being fixedly attached to said carrier substrate so that said flange portion abuts said surface of said carrier substrate; such that the hollow portion fits into said recess .

Nishiguchi does not appear to disclose that the land has a passage through an outer portion of said circumferential wall and flange, the soldering land or walls is hemispherical or concentric cylindrical shaped having a concentric hemispherical hollow portion thereinside, wherein said recess is hemispherical-shaped and said hemispherical portion of said soldering land fits into said hemispherical-shaped recess.

Rostoker (Fig 7a,b) utilizes forming a passage or slit through a land ("pad"; 710a,b).

It would have been obvious to one of ordinary skill in the art to form a passage through the land of Nishiguchi, such that the passage or slit is in the wall and flange and adjacent to a flange in order to release trapped gas during assembly and to eliminate bump distortion as taught by Rostoker (Col. 5-6, Lines 65-5; Col. 11, Lines 22-39).

In regards to the shape of the land and recess being either hemispherical or cylindrical, it would have been an obvious matter of design choice bounded by well known manufacturing constraints and ascertainable by routine experimentation and optimization to choose these particular dimensions because applicant has not disclosed that the dimensions are for a particular unobvious purpose, produce an unexpected result, or are otherwise critical, and it appears prima facie that the process would possess utility using another dimension. Indeed, it has been held that mere shape is prima facie obvious absent a disclosure that the limitation is for a particular unobvious purpose, produce an unexpected result, or are otherwise critical. See, for example, *In re Dailey*, 357 F.2d 669, 149 USPQ 47 (CCPA 1966) (configuration of the container was a matter of choice); *In re Rose*, 220 F.2d 459, 105 USPQ 237 (CCPA 1955); *In re*

Rinehart, 531 F.2d 1048, 189 USPQ 143 (CCPA 1976); Gardner v. TEC Systems, Inc., 725 F.2d 1338, 220 USPQ 777 (Fed. Cir. 1984), cert. denied, 469 U.S. 830, 225 USPQ 232 (1984).

Claim 7 is rejected under 35 U.S.C. 103(a) as being unpatentable over Nishiguchi and Rostoker as applied claim 1 and further in combination with Lau (Chip Scale Package).

Neither Nishiguchi nor Rostoker appear to explicitly disclose that the semiconductor device is a Chip Scale Package type (CSP).

However Lau teaches the use of CSP.

It would have been obvious to one of ordinary skill in the art to form the device as a Chip Scale Package type (CSP), in order provide increase device density and easier burn in as taught by Lau (Preface).

Response to Arguments

Applicant's arguments with respect to claims have been considered but are moot in view of the new ground(s) of rejection.

Conclusion

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Brestin et al (US 5,420,377).

Brestin discloses the use of slits in lands to release air trapped during soldering process in order prevent weakening of solder joints.

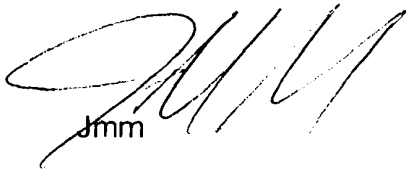
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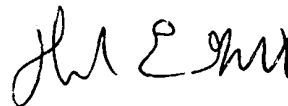
Any inquiry concerning this communication or earlier communications from the examiner should be directed to James M. Mitchell whose telephone number is (703) 305-0244. The examiner can normally be reached on M-F 10:30-8:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Kamand Cuneo can be reached on (703) 308-1233. The fax phone number for the organization where this application or proceeding is assigned is (703) 872-9306.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0956.



Jmm



DAVID E. GRAYBILL
PRIMARY EXAMINER